

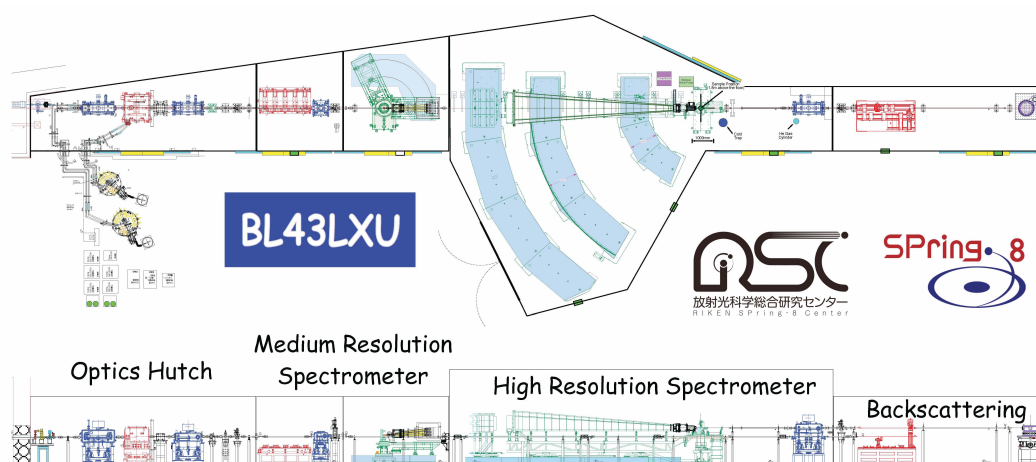
Advancing the state of the art of inelastic x-ray scattering at SPring-8

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Non-resonant, meV-resolution, inelastic x-ray scattering is a came into its own at 3rd generation synchrotron radiation facilities [1]. The technique (see [2] for a review) offers unprecedented access to atomic dynamics of liquids, and of small (now 10's of ng) samples. About 20 years ago we began to develop the method in Japan with the goal of leveraging SPring-8's strengths to produce world-leading performance. The first instrument, BL35XU [3], was comparable to those at other facilities, and made it clear that the main experimental limitation was the flux on the sample. Therefore a new facility was conceived [4], which, using series IDs tunable from 16 to 26 keV in the fundamental, and inter-ID focusing [5] in a long, 30m, straight section which promised, and delivered, about an order of magnitude improvement in flux on the sample. A similar method was also used to improve BL35. SPring-8 now has workhorse setups with 2.8 meV resolution at 18 keV, for extreme conditions, 1.25 to 1.6 meV resolution at 22 keV for liquids and crystalline materials and a practical sub-meV (~ 0.8 meV) setup at 26 keV [6] with sufficient flux to do experiments even in extreme and somewhat unstable conditions. The present talk will describe SPring-8's IXS program, covering some instrumentation issues, some programmatic issues, and some recent results made possible by the newly commissioned RIKEN BL43LXU.



Layout of RIKEN BL43LXU of SPring-8.

References

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